

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

MID-PACIFIC REGION

SOUTH-CENTRAL CALIFORNIA AREA OFFICE
FRESNO, CALIFORNIA



FINDING OF NO SIGNIFICANT IMPACT

ACCELERATED WATER TRANSFERS AND EXCHANGES
SOUTH OF DELTA CONTRACTORS
WATER YEAR 2006-2010

FONSI-06-09

Recommended:

D
Environmental Protection Specialist
South-Central California Area Office

2/15/06
Date

Concurred by:

Kathy Wood
Chief, Resources Management Division
South-Central California Area Office

2/21/06
Date

Approved by:

So *Michael Jackson*
Area Manager
South-Central California Area Office

3/2/06
Date

**FINDING OF NO SIGNIFICANT IMPACT
FOR THE
ACCELERATED WATER TRANSFERS AND EXCHANGES
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INTRODUCTION

In accordance with the Section 102 (2) (c) of the National Environment Policy Act (NEPA) of 1969, as amended, the South-Central Area Office of the U.S. Bureau of Reclamation (Reclamation), has determined that the approval of an accelerated water transfer and exchange program for the South of Delta Central Valley Project (CVP) Contractors during the 2006-2010 water year will not significantly affect the quality of the human environment. Furthermore, an environmental impact statement is not required. This Finding of No Significant Impact is supported by the attached environmental assessment which is hereby incorporated by reference.

The Federal action is the Proposed Action of the attached Environmental Assessment and is the approval of an Accelerated Water Transfer and Exchange Program for a period of five (5) years (from March 1,2006 to February 28,2011).

FINDINGS

This Finding of No Significant Impact is supported by the following factors:

1. No change in project supply: The South of Delta Contractors will continue to receive their allotted CVP project supply based upon hydrologic conditions.
2. Biological Resources: There would be no effect on biological resources as a result of the proposed action.
3. Threatened and Endangered Species: There would be no effect on any species listed pursuant to the Endangered Species Act (ESA). Although there are known listed species in the area, the transfer and exchange program will not affect critical habitat.
4. Cultural Resources: The action includes no new structures such as dams, canals, or reservoirs, construction activities, or physical changes to the environment and therefore will not affect prehistoric, historic, or traditional cultural properties.
5. Demographics and Environmental Justice: Because the proposed action is only increasing the flexibility of current operations, it will not have an adverse effect on human health or the environment, as defined by environmental justice policies and directives. The proposed action will not disproportionately affect any socio-economic or low-income groups.

6. Indian Trust Assets: No Indian Trust Assets occur within the Contractors' service areas. Therefore, no direct or indirect impacts to Indian Trust Assets would occur.

RECLAMATION

Managing Water in the West

**FINAL ENVIRONMENTAL ASSESSMENT
Accelerated Water Transfers and Exchanges
Central Valley Project Contractors
South of Delta Contractors
2006-2010**

FEBRUARY 10, 2006

**U.S. Department of the Interior
Bureau of Reclamation
South Central California Area Office
1243 N Street
Fresno, California 93721**

SECTION 1: PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 Purpose of Action

The purpose of the Proposed Action is to continue to implement an accelerated water transfer program (AWTP) that facilitates efficient water management by allowing contractors within the same geographical areas to conduct annual transfers of the type historically carried out under an accelerated program which streamlines Reclamation's approval process. The program, if approved allows water transfers and/or exchanges between South of Delta Central Valley Project (CVP) Contractors (Contractors) with access to Delta Division Facilities. This includes Delta Division, San Luis Unit, San Felipe Division and Cross Valley Contractors (CV Contractors) with CVP water served from CVP Delta Division Facilities or through the Joint Point of Diversion at Banks Pumping Plant.

1.2 Need for the Action

The AWTP is needed to reduce redundant reviews and costs associated with Reclamation's approvals. South of Delta (SOD) CVP Contractors and eligible CV Contractors need to relocate, or shift CVP water supplies to meet irrigation (agricultural/Ag) demand or municipal and industrial (M&I) requirements.

1.3 Scope of this Environmental Analysis

The scope of this environmental assessment (EA) is to analyze the environmental effects of annual water transfers and exchanges, for the period March 1, 2006, through February 28, 2010. All SOD CVP Contractors and CV Contractors with a long-term or interim water service contract are eligible to participate in the AWTP.

Approvals under the AWTP have been determined to be in compliance with the Central Valley Project Improvement Act (CVPIA) Section 3405(a). This section of the CVPIA authorizes all individuals or districts who receive CVP water under water service or repayment contracts, water rights settlement contracts or exchange contracts entered into prior to or after the date of enactment of the CVPIA, to transfer water for any purpose recognized as beneficial under applicable State law.

The AWTP allows the CVP Contractor to provide advance notice of transfers and exchanges meeting set criteria to Reclamation and receiving Reclamation's written acknowledgement rather than written approval. This analysis of the implementation of the described AWTP pertains not only to water transfers of the type or kind of transfers previously carried out before the passage of the CVPIA but is expanded to include other eligible transfer/exchange actions, which have had prior environmental analysis completed and have been pre-determined to meet the CVPIA provisions without requiring individual review by Reclamation and.

1.4 Authority and Guidelines for the Accelerated Water Transfer Program:

All water transfers are subject to the following authorities and guidelines as amended, updated and/or superseded:

- Title XXXIV CVPIA October 30, 1992, Section 3405 (a)
- Reclamation Reform Act (RRA), October 12, 1982, Section 226
- Long-term Renewal Water Service Contracts for the Delta Division, San Luis Unit, and/or San Felipe Division
- Interim Renewal Water Service Contracts for SOD CVP contractors who have not entered into a long-term water service contract during the term of this Environmental Assessment
- Reclamation's Interim Guidelines for Implementation of Water Transfers Under Title XXXIV of Public Law 102-575 (Water Transfer) February 25, 1993
- Reclamation and United States Fish and Wildlife Service (USFWS) Region 1, Final Administrative Proposal on Water Transfers April 16, 1998
- Reclamation's Regional Director's Letter Delegation of Regional Functional Responsibilities to the Area Offices – Water Transfers, Number 93-20 December 14, 1993

1.5 Terms and Conditions of the Biological Opinions

In order to be exempt from the “take” prohibition of the ESA, Reclamation must comply with terms and conditions which are pertinent to future water transfers and or exchanges within the CVP. These terms and conditions implement reasonable and prudent measures and outline mandatory reporting and monitoring. Reasonable and prudent measures are actions that the USFWS believes are necessary to minimize impacts, i.e., amount of or extent, of incidental take. The terms and conditions of any applicable Biological Opinions shall be hereby incorporated by reference.

SECTION 2: ALTERNATIVES: THE PROPOSED ACTION AND NO ACTION ALTERNATIVE

2.1 Introduction

The Bureau of Reclamation (Reclamation) will implement an accelerated process to approve water transfers and exchanges under Section 3405 of CVPIA that have occurred among SOD CVP Contractors prior to the CVPIA as well as those that have been predetermined to meet CVPIA and have had prior environmental analysis. This EA will examine the environmental impacts to resources as a result of the Proposed Action and its alternative in accordance with the Section 102 (2)(c) of the National Environmental Policy Act (NEPA) of 1969, as amended.

This EA evaluates implementation of a pre-approval process for CVPIA transfers and exchanges for the contract years 2006-2010. (A contract year begins March 1st and ends February 28th of the following year except for Santa Clara Valley WD whose water year is January 1st and ends December 31st). Each proposed transfer or exchange would be reviewed by the Contracting Officer for consistency with the project description within this EA and with all applicable permits, laws and regulations.

2.2 Description of Proposed Action

SOD CVP Contractors would transfer or exchange up to 150,000 acre-feet of their Delta CVP contract supply each year subject to the following parameters:

- Transfers or exchanges addressed in this EA are transfers or exchanges of CVP water between SOD Contractors (Contractors) all of whom are deemed to be located within the same geographical area. This includes transfers between DMC Division, San Luis Unit, San Felipe Division and the CV Contractor's delta supply as well as SOD refuges as the recipients of transfers.
- Transfers shall be of the type historically carried out among SOD Contractors and Cross Valley Contractors;
- Transfers that are greater than 20% of a contractor's supply must be public noticed by the Contractor prior to acknowledgment of such transfer.
- There will be no restriction on directionality – transfers do not require return transfers at a later date or year.
- Transferred water can be either Ag or M&I water.
- The ultimate purpose of use can be for Ag, M&I purposes, fish and wildlife purposes and/or groundwater recharge.
- Transfers will be completed between March 1st, and February 28th of the next year.
- All transfers and exchanges will be between willing sellers and willing buyers.
- Exchanges must be completed within a one-year period (365 days) from date of initial delivery of exchanged water.
- Transfers and exchanges are limited to a cumulative total of 150,000 ac-ft total annually.
- Transfers would occur without new construction or modifications to facilities.

- Transfers are limited to existing supply and will not increase overall consumptive use.
- Pertains to CVP water that would have been consumptively used or irretrievably lost to beneficial use during the year of the transfer.
- Transfer cannot exceed the average annual quantity of water under contract actually delivered to the Contractor during the last three years of normal deliveries prior to enactment of the CVPIA.
- Transfers for Ag would be used on lands irrigated within the last three consecutive years.
- Transfers will not lead to any land conversions.
- Transfers will comply with all Federal, State, Local or Tribal law or requirements imposed for the protection of the environment and Indian Trust Assets.
- The Transferee would comply with RRA.
- Water for transfer may not be freed up by shifting to an alternative surface water sources that could potentially adversely affect CVP operations or other third party interests.

“Transfers of the type historically carried out among Project Contractors” shall mean transfers that are short-term transfers and of the type that historically occurred within the same year for agricultural purposes prior to enactment of PL 102-575, and those that have historically occurred for additional beneficial purposes subsequent to CVPIA, between Project contractors located within the same geographical areas of the Project, each of whom had a long-term contract with Reclamation for Project water service that allowed for the transfer and/or exchange of Project water.

Transfers among Project Contractors located within the same geographical areas that are supported by water conservation measures, increased water use efficiency, or other actions that result in water surplus to the Contractor’s current year demand, will be deemed to comply with the criteria for reduction in the amount of water consumptively used or irretrievably lost. This consumptive use concept will apply to transfers between Project contractors located within the same geographical area who receive water through existing Delta Division facilities. The rationale for this concept is (1) Project contractors within the same geographical area are all served Project water pumped from the Delta and (2) allowing water transfers between Project contractors located within the same geographical area has no effect on total Delta demand or Project operations, and does not affect the amount of Project water Reclamation would otherwise pump, absent the transfer, and deliver for Project purposes within that geographical area. Such transfers must have occurred historically and analyzed under a prior environmental assessment resulting in a findings of no significant impact.

This project does not cover:

- Transfers that meet the above criteria but are increments of larger actions
- Transfers that involve the transfer of previously transferred water
- Transfers that involve a third party intermediary as an exchanger
- Transfers of Section “215” water

2.3 Description of No Action Alternative

The No Action Alternative would be minimum implementation of an accelerated water transfer program as described as a continuation of the project description in the Blanket Approval of Historic, Temporary Transfers and Exchanges and Wildlife Refuge Water Acquisition of Project Water Between South of Delta CVP Contractors (SCCAO EA-00-12), March 2000 (which is incorporated by reference). (This implementation strategy has been in place for the period March 1, 2000 through February 28, 2005.)

The No Action Alternative includes transfers and exchanges that are historic, routine, and are valid for a single year. The total amount of water transferred or exchanged annually would be

limited to 150,000 ac-ft. The amount of water would be limited to the existing supply and would not be approved if it increased overall consumptive use. This alternative pertains to water that would have been consumptively used or irretrievably lost to beneficial use during the year of the transfer. Criteria were included that ensure no effect to threatened or endangered species or critical habitat. These criteria are required that each delivery:

- 1) Would be for irrigation purposes for lands irrigated within the last three years, groundwater recharge, or fish and wildlife resources and would not lead to any land conversions. Water would be delivered to existing cropland, wildlife refuges, groundwater basins, or incidental municipal and industrial use.
- 2) Would occur within a single water year.
- 3) Would occur on a willing seller and willing buyer basis.
- 4) Would convey water through existing facilities with no new construction or modification to facilities and must occur between existing CVP contractors and/or the United States Department of the Interior.
- 5) Would comply with all Federal, State, Local or Tribal law or requirements imposed for protection of the environment and Indian Trust Assets.

SECTION 3: AFFECTED ENVIRONMENT

3.1 Introduction

The context for this EA is the CVP service areas for the SOD Contractors and includes the valley floor of the San Joaquin Valley within Fresno, Merced, Stanislaus, San Joaquin, Kern, Tulare and Kings Counties, as well as, the Santa Clara Valley within Santa Clara and San Benito Counties. This section identifies the affected environment, conditions that currently exist, and the issues that may be affected by the Proposed Action.

An initial scoping of potential impacts that could occur as a result of implementing the Proposed Action/Project was conducted. As a result of this evaluation it was determined that several environmental issues would not be affected by the continued implementation of the ATWP. Therefore, the issues listed in Table 3-1 have been eliminated from further evaluation in this document. Resource issues listed in Table 3-2 are evaluated in more detail in this EA.

Table 3-1

Environmental Issues Eliminated from Detailed Assessment as a Result of Initial Evaluation

Climate and Air Quality	Recreation Resources
Soils, Geology and Mineral Resources	Aesthetic Resources
Topography	Hazardous Wastes and Materials
Noise	Public Services (fire, police protection, medical services)
Transportation/Traffic	Public Utilities (wastewater, storm water, solid waste)
Housing	

Table 3-2

Environmental Issues Analyzed in this EA.

Biological Resources & Special Status Species	Cultural Resources
Groundwater	Indian trust Assets
Surface Water	Environmental Justice
Land Use	

3.2 South of Delta CVP Contractors

There are 37 Long Term CVP Contractors involved in the Proposed Action. Two are located in the Santa Clara Valley. Eight are located on the eastern side of the San Joaquin Valley. The remaining 27 CVP Contractors are located on the western side of the San Joaquin Valley. Water for SOD Contractors comes from the Sacramento-San Joaquin River Delta (Delta). Water is delivered to the Delta from northern California sources through the Sacramento River and its tributaries. The total amount of water under contract for these 37 CVP Contractors is about 2,111,708 acre feet (af).

The names of the Contractors and their contract amounts are listed in Table 3-3. These Contractors have historically transferred CVP water amongst themselves. Table 3-4 summarizes these transfers since 1982.

Some of the Contractors in the table below have, or are, in process of assigning all or part of their CVP water supply to other CVP Contractors. The combined total amount of water for these CVP Contractors has not changed.

Table 3-3. CVP South of Delta Contractors and Contract Entitlements

South of Delta CVP Contractors	Contract Amount (ac-ft)
Banta Carbona ID (Partially assigned 5,000 af to City of Tracy)	20,000
Broadview WD	27,000
Centinella WD (Full Assignment to Westlands WD)	2,500
Del Puerto WD	140,210
Eagle Field WD	4,550
Laguna WD	800
Mercy Springs WD (Partial Assignments 6,260 to Pajaro and 4,198 to Westlands)	2,842
Oro Loma WD	4,600
Patterson WD	16,500
Plain View WD (name changed to Byron-Bethany ID)	20,600
City of Tracy (partial assignments from BCID/TWSID)	10,000 + 7,500
The West Side ID (Partially assigned 2,500 af to City of Tracy)	5000
West Stanislaus ID	50,000
Widren WD (Full assignment to Westlands WD)	2,990
James ID	35,300
Tranquillity ID	13,000
Hughes, Melvin (name changed recently to Tranquillity PUD)	70
Fresno Slough	4,000
Reclamation Dist. 1606	228
Coelho Family Trust	2,080
Pacheco WD	10,080
Panoche WD	94,000
San Luis WD	125,000
Westlands WD	1,161,000
City of Avenal	3,500
City of Huron	3,000
City of Coalinga	10,000
San Benito County WD	43,800
Santa Clara Valley WD	152,800
County of Fresno	3,000
Hill Valley Irrigation District	3,346
Kern-Tulare Water District	40,000
Lower Tule River Irrigation District	31,102
Pixley Irrigation District	31,102
Rag Gulch Water District	13,300
Tri-Valley Water District	1,142
County of Tulare	5,308

Before passage of the CVPIA these SOD Contractors transferred or exchanged CVP water for the purpose of improved water management. Table 3-4 summarizes each Contractor's water transfers between 1982 and 1992.

Table 3-4. Summary of Water Transfers & Exchanges 1982 to 2003 (Pre CVPIA)

District	Total Transferred/Exchanged 1982-1992 (AF)
Banta-Carbona ID	88,739
Broadview WD	34,525

Centinella WD	1,920
City of Avenal	1,401
City of Coalinga	5,351
City of Huron	1,897
City of Tracy	3,870
Coelho Family Trust	8,848
Del Puerto WD	176,710
Eagle Field WD	6,426
Fresno Slough WD	12,814
Melvin Hughes (recent name change to Tranquillity PUD)	243
James ID	44,012
Laguna WD	11,792
Mercy Springs WD	55,637
Oro Loma WD	10,219
Pacheco WD	1,098
Panoche WD	197,608
Patterson WD	102,421
Plain View WD (name change to Byron-Bethany ID)	86,679
Reclamation District 1606	502
Total	2,848,796
Avg. over 11 years	135,656

3.3 Cross Valley Contractors

Cross Valley Contractors are somewhat unique among the SOD Contractors in that they have CVP water supplies originating from the Delta and/or Millerton Lake. There are eight CV Contractors with an annual contract amount of 128,300 af per year. Only the CV Contractor's Delta CVP water supply(ies) is/are eligible for participation in the AWTP for the SOD Contractors.

The Federal water supply is delivered to the CV Contractors in the Delta and is diverted by Department of Water Resources (DWR) through the Harvey O. Banks Pumping Plant of the State Water Project. Reclamation provides the water supply and DWR provides the conveyance. Because the water was made available from CVP supplies it remains subject to Federal Reclamation law and CVP South of Delta allocation policy and is therefore subject to any limitations placed on CVP deliveries.

In 1975 the privately financed CV Canal was completed bringing water from the California Aqueduct (Aqueduct) near Taft, California and through a series of six pump lifts to the east side of the San Joaquin Valley past the city of Bakersfield. With minor exceptions, the CV Contractors cannot take direct delivery of their delta supply. Therefore, an exchange for Friant Division water was envisioned. A Memorandum of Understanding (MOU) was entered into by the eight CV Contractors with Arvin Edison Water Storage District (AEWSD) which delineated that the Delta supplies conveyed from the Aqueduct via the CV Canal would be delivered to AEWSD and AEWSD and allows the CV Contractors to take delivery of their Friant supplies from Millerton Lake delivered via the Friant-Kern Canal. Although the agreement did not require a bucket for bucket exchange each year due to differing historic water supply reliabilities and allocations, it was anticipated that over a 20 year period the exchange would be relatively balanced. These exchanges are addressed in Article 5 of the CV Contractors' water service contract and are not part of the AWTP.

Three of the CV Contractors no longer participate in the exchange with AEWS. Pixley Irrigation District, Lower Tule River Irrigation District and Fresno County have discontinued the exchange with AEWS. Lower Tule River Irrigation District and Pixley Irrigation District have transferred their water to other CVP water districts and purchase alternative supplies.

3.4 Groundwater Resources

The SOD Contractors lie within the San Joaquin River and Tulare Lake ground water hydrologic regions and the Central Coast hydrologic region (for the San Felipe Division). The Central Coast hydrologic region is located in the Santa Clara Valley. The San Joaquin River and Tulare Lake hydrologic regions are located in the San Joaquin Valley. Due to the high salinity of the groundwater underlying the west side of the San Joaquin Valley most Contractors do not rely heavily on groundwater to meet their irrigation needs. Some of the Contractors do use groundwater wells during dry years when they have little other surface supplies or to meet peak demands. These Contractors include the City of Tracy, Eagle Field WD, James ID (who pumps from the eastern most boundary of the district to tap into higher quality groundwater), Mercy Springs WD, Oro Loma WD, Patterson ID, Tranquillity ID San Benito County WD, Santa Clara Valley Water District and West Stanislaus ID. If they do utilize groundwater, typically it is blended with surface water. Additionally, many of the Contractors involved in this action have been impacted by increasing salinity in their groundwater supplies or groundwater quality degradation due to percolation of farm drainage. These problems are most prevalent in the central and northern portion of the Proposed Action area.

CVP facilities in the San Felipe Division were designed and constructed to avoid losses to groundwater; therefore, groundwater resources in the San Felipe Division are not directly affected by the operation of the CVP facilities except through the use of CVP water. In the San Felipe Division as well as for other SOD Contractors groundwater levels were declining prior to the introduction of CVP water. In addition, in the San Felipe Division and in other parts of the action area, because the groundwater was primarily recharged through percolation of applied irrigation water, the perched groundwater aquifer has become extremely saline following years of reuse within the basins. With the introduction of higher quality CVP water, the groundwater levels have been restored in many areas and salinity levels have declined under irrigated areas. However, direct agricultural use of CVP water is adversely affected during below normal and dry hydrologic water year types.

3.5 Surface Water Supplies

All of the Contractors involved in the Proposed Action receive water pumped from the Delta which originated from northern federal storage facilities such as Shasta. For the Contractors, other than the CV Contractors, the water is pumped at the federal Tracy Pumping Plant, transported down the Delta-Mendota Canal (DMC) to O'Neill Forebay where the water is either pumped into the forebay for delivery to the San Luis Unit (via the San Luis Canal); pumped into the San Luis Reservoir where it will be subsequently pumped into the Santa Clara Conduit for delivery to the San Felipe Division or allowed to continue on down the DMC for delivery to the DMC Contractors along the canal or who divert out of Mendota Pool. The CV Contractor's CVP supplies are pumped at the State of California's Banks Pumping Plant and conveyed on the state side of the California Aqueduct for ultimate delivery to turnout 12E at the Cross Valley

Canal, for delivery to a transferee along the way or for delivery to an exchanger who will exchange the water to allow for in-district delivery. As part of the long-term contract process, Reclamation conducted a needs analysis to document the beneficial use of the entire CVP contract water supply. The results of the needs analysis confirmed the beneficial use of CVP water within the Contractor's service area boundaries.

Some of the Contractors involved in the project also have water rights to divert from the San Joaquin River (i.e. Patterson ID, The West Side ID, and West Stanislaus ID) or have settlement contracts to allow diversion of water that is developed in the CVP but is actually making the district whole for pre-existing water rights that may have been interfered with by the construction or operation of the CVP (i.e. Tranquillity ID, Fresno Slough ID, James ID). Banta Carbona ID has water rights to divert directly from the Delta. Some of the CV Contractors have non-Project water supplies from Sierra Nevada Rivers. Some of the CV Contractors also have and utilize groundwater recharge facilities. Santa Clara Valley Water District uses local water supplies, recycled water, SWP water, and CVP water. Santa Clara Valley Water District provides water supplies to all of Santa Clara County through treated water and groundwater recharge. San Benito County Water District provides retail and wholesale water service and uses CVP water and local water to recharge the groundwater. San Benito County Water District provides CVP water directly to most agricultural users and indirectly through recharge to agricultural users and municipal users that rely solely upon groundwater for water supplies. Surface water is the main source of water supply for the Contractors involved in this action.

Table 3.5 Cross Valley Contractor's Water Supplies In Addition to CVP Contractual Supplies

CV CONTRACTORS	CVP CONTRACT SUPPLY (AF)
County of Fresno County of Fresno Fresno County Service Area 34 (Brighten Crest)	<u>3,000 Total</u>
County of Tulare Alpaugh ID Atwell Island WD Hills Valley Irrigation District Saucelito ID Stone Corral ID City of Lindsay Smallwood Vineyards Strathmore Public Utility District Styrotek, Inc. City of Visalia	<u>5,308 Total</u> 100 Ag 50 Ag 2,958 Ag 100 Ag 950 Ag 50 M&I 255 Ag 400 M&I 45 M&I 400 M&I
Hill's Valley Irrigation District	3,346 Ag
Kern-Tulare Water District	40,000 Ag
Lower Tule River Irrigation District	31,102 Ag
Pixley Irrigation District	31,102 Ag
Rag Gulch Water District	13,300 Ag
Tri-Valley Water District	1,142 Ag
TOTALS	128,300 Ag

3.6 Land Use

The Contractors involved in the Proposed Action are located in portions of Fresno, Merced, Stanislaus, Santa Clara, San Benito, San Joaquin, Kern, Tulare and Kings Counties. The following discussion generally addresses lands located within these counties. The following discussion provides information on land uses within each contractor's service area and includes a discussion of current agriculture and future trends in agriculture as applicable. It also includes a discussion of current land use planning and development projects; while this information is indicative of land use and growth trends.

San Joaquin County

San Joaquin County encompasses approximately 1,440 square miles and includes the seven incorporated cities of Stockton, Tracy, Manteca, Escalon, Ripon, Lodi, and Lathrop. Stockton and Tracy are the largest cities in the county. The City of Tracy is the only CVP contractor in the DMC Unit that is a municipality and uses its CVP supply solely for M&I use.

According to the county's most recent General Plan, approximately 86 percent of the county's total acreage in 1990 was used for agriculture. The land uses in San Joaquin County are shown in the Table to the right.

San Joaquin County Land Uses

Land Use	Acres	Percentage of County
Agriculture	788,896	86.47
Urban*	63,760	6.99
Other Land	49,332	5.41
Water	10,341	1.13
Total	912,329	100.00

Source: San Joaquin County General Plan (San Joaquin County 1992a, 1992b, 1992c)

* Includes residential, commercial and industrial

San Joaquin County contains large areas of highly productive soils. Agriculture and related activities have historically constituted a major portion of the county's economic base, and agriculture has been a mainstay of the county's economy. According to the 1997 Agricultural Census for San Joaquin County, there were 808,838 acres in farms; this represents an increase from 783,715 acres in 1992, but a decrease from the 823,729 acres in 1987. It is estimated that with projected population growth and continued urbanization in the county that the amount of agricultural land lost could increase from the 10 percent loss over the last 50 years to a 33 percent loss by the year 2040 (San Joaquin County 1992a).

Stanislaus County

Stanislaus County encompasses an area of approximately 1,500 square miles and includes the nine incorporated cities of Ceres, Hughson, Modesto, Newman, Oakdale, Patterson, Riverbank, Turlock, and Waterford. Modesto and Turlock are the largest cities in the county.

Stanislaus County has adopted a number of community plans for most of the unincorporated towns in the county. Community plans outline land uses and future growth patterns of the towns

in the county and are used in conjunction with county general planning documents. For unincorporated areas not included in a community plan, land use designations generally include residential, commercial, industrial, agricultural, urban transition, and industrial transition. Over 95 percent of the area in the unincorporated county is zoned for agricultural use.

The Stanislaus County General Plan states that urban development has spread over 48,000 acres, much of which was originally prime farmland in agricultural production. According to the 1997 Agricultural Census for Stanislaus County, there were 732,736 acres in farms; this represents a decrease from 759,649 acres in 1992 and a further decrease from 819,845 acres in 1987.

Madera County

Located in the center of California, Madera County encompasses 2,147 square miles and includes the cities of Chowchilla, Madera and unincorporated communities of Ahwahnee, Bass Lake, Berenda, Coarsegold, Fairmead, Madera Ranchos, North Fork, Oakhurst, O'Neals, Raymond, and Rolling Hills. The population is 129,400 in Madera County. There are 977 farms in Madera County with an average size of 383 acres. Agriculture is the largest industry in the county, accounting for 29.9% of the employment. According to the 1997 Agricultural Census for Madera there were 641,546 acres in farms, a decrease from 749,465 acres five years earlier.

Merced County

Merced County encompasses approximately 2,020 square miles and includes the six incorporated cities of Atwater, Dos Palos, Gustine, Livingston, Los Banos, and Merced and 18 unincorporated communities. Merced is the largest incorporated city in the county.

Merced County uses the "Urban Centered Concept" as a basic land use principle. This concept directs urban development in identified centers. Increased growth often results in a loss of the most productive agricultural soils. Under this concept, however, urban development will only occur within cities, unincorporated communities, and other urban centers. In Merced County, besides the urban area, rural areas of the county are typically used for cropping or pasturing activities and are subject to their own land use designations. When the general plan was developed in 1990, it was estimated that 80 percent of the population lived in the urban centers, the remaining 20 percent lived in rural areas, and 95 percent of the land in the county was considered rural.

According to the 1997 Agricultural Census for Merced County, there were 881,696 acres in farms, a decrease from 1,049,302 acres ten years earlier.

Fresno County

Fresno County encompasses nearly 6,000 square miles and includes the 15 incorporated cities of Coalinga, Clovis, Firebaugh, Fowler, Fresno, Huron, Kerman, Kingsburg, Mendota, Orange Cove, Parlier, Reedley, San Joaquin, Sanger, and Selma. Over 60 percent of the population resides in the county's two largest cities, Fresno and Clovis.

In 1997, approximately 50 percent of the county's total acreage was used for agriculture. The current land uses in Fresno County are shown on the Table below.

	Fresno (1997)	County	Land	Uses
Farming and agriculture-related businesses comprise a major component of the local economy. Factors that contribute to its success include excellent soil and climatic growing conditions and workforce and transportation availability. According to the 1997 Agricultural Census for Fresno County, there were 1,881,418 acres in farms; this represents a decrease from 1,975,373 acres in 1987.	Land Use		Square Miles	
	Residential		152	
	Commercial		7	
	Industrial		11	
	Agricultural		2,911	
	Resource Conservation ¹		2,691	
	Unclassified ²		11	
	Incorporated Cities		154	
	Total		5,937	
	Source: Fresno County General Plan (County of Fresno 2000a, 2000b)			
	¹ Including national forests, parks and timber preserves			
	² Includes streets, highways and rivers			

Kings County

Located in the southern half of the Central Valley, Kings County encompasses 1,392 square miles. The county includes the four incorporated cities of Hanford, Lemoore, Corcoran, and Avenal. Approximately 67 percent of the county's population lives in the incorporated cities (Kings County Planning Department 1993).

Kings County's economy has been dominated by agriculture and related industries since its formation in 1893. Kings County has consistently ranked among the top counties in the nation in the production of cotton, barley, and alfalfa seed. The county also produces 39 crops or products, including milk, cattle, and turkeys, that gross over \$1 million per year. According to the 2002 Census of Agriculture for Kings County (National Agricultural Statistics Services 2002c), there were 645,598 acres in farms, a 2 percent decrease from 661,363 acres in 1997. There were also 1,154 farms in Kings County, a 5 percent decrease from 1,215 farms in 1997 (National Agricultural Statistics Services 2002c). Information on land available for urban development in Kings County is shown below.

Land Available in Kings County for Urban Development in 1993

Land Use	Acres
Residential	1,696
Commercial	634
Industrial	1,003
Total	3,333
Source: Kings County Planning Department 1993	

Kern County

Kern County is the third-largest county in California encompassing approximately 8,170 square miles and includes Arvin, California City, Maricopa, McFarland, Ridgecrest, Shafter, Tehachapi and the City of Bakersfield. None of the cities receive CVP M&I water supplies.

Kern County's economy is dominated by agriculture with 2,731,341 acres incorporated into farms. Kern County has consistently ranked among the top counties in the nation in agricultural production with the main produce being wheat, cotton and forage crops. Similar to the statewide trend, the County's agriculture areas are facing increasing pressure to convert productive farmland to housing, industrial, and commercial development. The County of Kern's General Plan Land Use, Open Space, and Conservation Element incorporates policies and programs that recognize the importance of agriculture and the necessity to manage this resource for future use. The planning document also recognizes that tax and economic incentives, available markets, and water are important factors to ensuring the long-term retention of agricultural use. The continued existence of large, contiguous areas of agricultural zoning, Williamson Act and Farmland Security Zone Programs, and the County's adopted Right-to-Farm/Right-to-Business Resolutions acknowledge agriculture's importance to the County.

Kern County's population is expected to exceed 1,088,600 people by the year 2020. The Land Use, Open Space, and Conservation Element of the Kern County's General Plan incorporates policies and implementation measures that are designed to avoid unplanned growth and premature farmland conversion. Measures incorporated in this planning document include provisions to evaluate agriculture and resource land conversion proposals to ensure that premature and unplanned urban development does not occur.

Tulare County

Centrally located, Tulare County encompasses approximately 4,863 square miles and includes the cities of Dinuba, Cutler, Orosi, Three Rivers, Woodlake, Visalia, Exeter, Farmersville, Lindsay, Tulare, Porterville and Earlimart. The City of Visalia is the only potential M&I recipient of CVP water as a subcontractor of the County of Tulare who is a CVP contractor. Mountain peaks of the Sierra Nevada range rise to more than 14,000 feet in its Eastern half.

Meanwhile, the extensively cultivated and very fertile valley floor in the Western half, has allowed Tulare County to become the second-leading producer of agricultural commodities in the United States. In addition to substantial packing / shipping operations, light and medium manufacturing plants are increasing in number and are becoming an important factor in the County's total economic picture.

Tulare County, with a population of approximately 397,000, is located in the San Joaquin Valley, the center of California. Tulare County is also recognized as the largest agricultural-producing county in the world and ranks number one in the state, as well as the nation, for total milk production with 1,393,456 acres in agricultural production in 2002. Tulare County agribusiness is dynamic and reflects the changing demands of consumer and export markets. The county's agribusiness alone produces over \$3 billion dollars, an increase of 5% since 1998.

San Benito County

The Land Use Element of San Benito County General Plan identifies three major categories of land uses: urban, rural, and agricultural. The urban land is exclusively located in the cities of Hollister and San Juan Bautista. The rural land includes areas with low density development in areas such as lands surrounding Hollister and San Juan Bautista. Agricultural land includes very low density development and makes up over 87 percent of the total land in San Benito County.

Santa Benito County has a total area of about 893,440 acres. Agricultural land uses currently cover about 715,800 acres. In 1992, the total estimated production value of agricultural crops in San Benito County was \$132 million/year. In San Benito County Water District, the majority of land is agricultural and supports row crops, fruit and nut orchards, cattle, and field crops. The county has established policies to protect agriculture as an important industry in San Benito County. The San Benito County General Plan identifies land to be converted to municipal uses to be located adjacent to urban areas and encourages the use of infilling development methods rather than conversion of agricultural land.

The population of San Benito County has increased from 18,226 in 1970 to 51,800 in 2000. This represents an average annual growth rate over the past 30 years of 3.5 percent. Approximately 52 percent of these people lived in Hollister and San Juan Bautista in 1990. The Department of Finance projects a population of 82,300 in 2020 and 97,900 in 2030 for San Benito County.

Santa Clara County

It should be noted that Santa Clara Valley Water District has no responsibility or ability to influence land use changes, zoning changes, or land use decisions. These policies are solely determined by Santa Clara County and individual cities. Santa Clara Valley Water District also has no ability to determine "willingness to serve" any urban customers because the water district does not directly serve urban customers, but provides water supplies to retailers.

The Land Use Element of Santa Clara County General Plan identifies six major categories of land uses: rural unincorporated, cities (or urban incorporated), urban unincorporated, resource conservation, areas with special land use policies, and other land uses. The rural unincorporated

areas are located throughout the county and represent 67 percent of the total county area. There are 15 cities which are primarily located in the northern portion of the county. The urban unincorporated areas are primarily located adjacent to the cities and within the Urban Services Areas.

Santa Clara County has a total area of about 835,400 acres. Agricultural land uses currently cover about 457,000 acres. In 1991, the total estimated production value of agricultural crops in Santa Clara County was \$150 million/year. There are over 30 different food crops plus cattle, nursery crops, and cut flowers. Approximately 41 percent of the county is under Williamson Act protection. The county and several cities have considered establishment of agricultural preserves. The Santa Clara County General Plan acknowledges that some agricultural lands could be converted to residential uses, but this would be minimized through the use of mitigation measures included in the county general plan.

The population of Santa Clara County has increased from 1,065,300 in 1970 to 1,763,000 in 2000. This represents an average annual growth rate over the past 30 years of 1.7 percent. The Department of Finance projects a population of 2,196,750 in 2020 and 2,400,600 in 2030 for Santa Clara County, including the incorporated areas. For the purposes of this EA, it is assumed that the growth projections are linear between 2020 and 2030, and therefore the projected 2025 population would be 2,299,500 for Santa Clara County.

3.7 Wildlife and Special Status Species

An unofficial list of endangered, threatened, and sensitive species that may occur within the Contractor boundaries on San Joaquin Valley floor (action area) within Fresno, Merced,

Stanislaus, Santa Clara, San Benito, San Joaquin, Kern, Tulare and Kings Counties was obtained from the USFWS's Endangered Species Lists website at http://sacramento.fws.gov/es/spp_list.htm. Additional data was obtained from the California Department of Fish and Game's California Natural Diversity Database (CNDDDB) website at <http://www.dfg.ca.gov/whdab/html/cnddb.html>. Species accounts are located in Appendix C.

Land use changes have occurred in the districts over the last 20 years. These changes are primarily due to the population growth of the State of California as a whole. Land has been converted from rangeland in many of the districts, with more change occurring near the population and transportation hubs. Land conversion to municipal use has been encouraged by the local governments for the last decade and has been taking place primarily without the use of CVP water.

Species of Concern

Twenty-five federally listed threatened and endangered wildlife and plant species are included on USFWS species list for the study area.

Critical habitat is currently designated within the proposed project area for the vernal pool fairy shrimp, valley elderberry longhorn beetle, delta smelt, California tiger salamander, California

red-legged frog, Buena vista lake shrew, Fresno kangaroo rat, fleshy owls clover, San Joaquin Valley orcutt grass, Hairy orcutt grass and green's tuctoria

Recovery plans are in place for the valley elderberry longhorn beetle, delta smelt, California red-legged frog, blunt-nosed leopard lizard, Fresno kangaroo rat, and San Joaquin kit fox.

Table 3-6 Species of Concern

COMMON NAME	SCIENTIFIC NAME	STATUS	
ANIMALS			
California Tiger Salamander	<i>Ambystoma californiense</i>	Threatened	
Vernal pool fairy shrimp	<i>Brachinecta lynchi</i>	Threatened	
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	Threatened	
Giant kangaroo rat	<i>Dipodomys ingens</i>	Endangered	
Tipton kangaroo rat	<i>Dipodomys nitratooides nitratooides</i>	Endangered	
Fresno kangaroo rat	<i>Dipodomys nitratooides exilis</i>	Endangered	
Bald eagle	<i>Haliaeetus leucocephalus</i>	Threatened, Delisted	Proposed
Blunt-nosed leopard lizard	<i>Gambelia sila</i>	Endangered	
Delta smelt	<i>Hypomesus transpacificus</i>	Threatened	
Vernal pool fairy shrimp	<i>Lepidurus packardi</i>	Threatened	
Central Valley steelhead	<i>Onchorhynchus mykiss irideus</i>	Threatened	
California red-legged frog	<i>Rana aurora draytonii</i>	Threatened	
Giant garter snake	<i>Thamnophis gigas</i>	Threatened	
Buena Vista Lake shrew	<i>Sorex ornatus relictus</i>		
San Joaquin kit fox	<i>Vulpes macrotis macrotis</i>	Endangered	
PLANTS			
Fleshy owl's-clover	<i>Castilleja campestris spp. Succulenta</i>	Threatened	
California jewel-flower	<i>Caulanthus californicus</i>	Endangered	
Kern mallow	<i>Eremalche kernensis</i>	Endangered	
San Joaquin woollythreads	<i>Monolopia congdonii</i>	Endangered	
Bakersfield cactus	<i>Opuntia basilaris var treleasei</i>	Endangered	
San Joaquin Valley Orcutt grass	<i>Orcuttia inaequalis</i>	Threatened	
Hairy Orcutt grass	<i>Orcuttia pilosa</i>	Endangered	
Hartweg's golden sunburst	<i>Pseudobahia bahiifolia</i>	Endangered	
San Joaquin sunburst	<i>Pseudobahia peirsonii</i>	Threatened	
Greene's tuctoria	<i>Tuctoria greenei</i>	Endangered	

Brief summaries are provided in Appendix C for the federally listed USFWS species for the study area. All six of the federally listed plants summarized have low potential for occurrence within the Action Area, although three of these species have high potential to occur within the one-mile buffer. Two of these species, fleshy owl's clover and San Joaquin Valley Orcutt grass, have historic occurrences documented within the Action Area. Both of these occurrences have been extirpated by development; however, these two species have extant occurrences within the one-mile buffer. None of the other listed plant species has historic or extant occurrences within the Action Area or one-mile buffer.

In August 2003, the USFWS issued a final designation of critical habitat for four vernal pool crustaceans and eleven vernal pool plants (USFWS 2003a), including four of the plants considered in this report (fleshy owl's clover, San Joaquin Valley Orcutt grass, hairy Orcutt grass, and Greene's tuctoria). None of this critical habitat overlaps the Action Area; however, designated critical habitat units for fleshy owl's clover and San Joaquin Valley Orcutt grass are located within the one-mile buffer immediately adjacent to the Action Area. Locations and details of critical habitat designations in relation to the study area are discussed below. There are no recovery plans currently in place for any of these six plant species.

3.8 Cultural Resources

The San Joaquin Valley supported extensive populations of Native Americans, principally the Northern Valley Yokuts, in the prehistoric period. After Spanish and Mexican incursions in the early 19th century, coupled with the introduction of European born epidemics, Native American populations declined and became culturally extinct in the San Joaquin Valley by the mid-19th century. The extent of cultural studies in the San Joaquin Valley has been limited. The conversion of land and intensive farming practices over the last century has probably destroyed many Native American cultural sites.

3.9 Indian Trust Assets

The environmental context and setting of this environmental assessment is restricted to lands within the CVP permitted Place of Use. Any area outside of this place of use is not included in this analysis and will not receive water from this Proposed Action.

Indian Trust Assets are legal interests in property or rights held in trust by the United States for Indian Tribes or individual Native Americans. Trust Status originates from rights imparted by treaties, statutes, or executive orders. Such assets cannot be sold, leased, or otherwise alienated without federal approval.

Indian reservations, rancherias, and allotments are common Indian Trust Assets. Allotments are parcels of land held in trust for specific individuals that may be located outside reservation boundaries. In addition, such assets include the right to access certain traditional areas and perform traditional ceremonies. There are no Indian Trust Assets recognized by the Bureau of Indian Affairs in the San Felipe Division.

3.10 Environmental Justice

Executive Order 12898 requires that all federal agencies address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the U.S. and its territories. The vast majority of the water utilized within the project would be for agricultural uses although M&I uses are allowed and may make up a small part of the action. Low income and minority populations are commonly found working in agricultural settings.

SECTION 4

ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

This section of the EA analyzes the effects of the Proposed Action and No Action Alternatives to the resource identified in Table 3.2.

4.2 Groundwater Resources

As stated in Section 3.4 some farmers in the project area use groundwater to make up for water delivery timing delays, for decreased water deliveries due to dry hydrologic conditions and/or to meet peak demands. Groundwater is typically of low quality and is used as a last resort in most districts. Throughout the northern and central portions of the San Joaquin Valley there has been a significant amount of ground subsidence over the last century due to excessive groundwater overdraft. In wet years, the groundwater is recharged via deliberate man induced efforts.

Under the Proposed Action, the delivery of transferred water will reduce the need for an amount of groundwater pumping in individual districts. Groundwater pumping can deplete the already compromised aquifer in the San Joaquin valley. Delivery of transferred in surface water can offset the need for groundwater pumping and improve the quality of the water applied to agricultural lands or for M&I purposes.

The Delta Division, Cross Valley and San Luis Unit CVP Contractors are located within the San Joaquin Valley. The aquifer is interconnected beneath the Delta Division, Cross Valley and San Luis Unit CVP Contractors and the overall water supply available to the contractors collectively is not changing, delivery of water in a manner which has occurred historically would not impact the groundwater aquifer but may slightly improve localized groundwater level depressions.

The San Felipe Division is located in the Santa Clara Valley which does not overlie the same aquifer as the remaining SOD CVP Contractors. The San Felipe Division is comprised of two CVP Contractors which provide mainly M&I water from CVP and State Water Project sources including groundwater. CVP water supplies are used for Ag, M&I and groundwater replenishment or blending. It is unlikely the San Felipe Division CVP Contractors would transfer water to other SOD CVP Contractors. The Delta Division, Cross Valley or San Luis Unit Contractors would likely transfer water to the San Felipe Division. Less water would be applied to benefit the aquifer underlying the San Joaquin Valley. Less water delivered in the San Joaquin Valley would reduce groundwater recharge capabilities. Groundwater quality and quantity could be reduced. The CVP SOD Contractors are responsible for managing water supplies to meet demands for their customers. The transfers allow the flexibility to manage the overall water resources including groundwater. The availability of the transfer water is contingent upon fluctuating conditions. The SOD CVP Contractors respond to these fluctuating conditions by using water management actions (i.e. transfers and exchanges) to meet demands. Exchanged water is returned within 365 days and does not result in major changes in groundwater supplies. The transfers and exchanges in the AWTP would not lead to long-term changes in deliveries or

uses. Therefore, the transfer of water from the San Joaquin Valley to the Santa Clara Valley would not result in major reductions in groundwater quality or quantity.

The No Action Alternative also envisions an Accelerated Water Transfer Program operating under the same parameters as were implemented for the past five years. It anticipates transfers between the same districts up to a higher transfer volume of 150,000 ac-ft per year. Since the annual average of water transferred in total (which is a larger pool of transfers than those under the AWTP) is less than 150,000 ac-ft, the cap allowed in the Proposed Action will not negatively impact any positive effect that flexibility in water transfers would afford.

This action may reduce groundwater pumping slightly on a localized basis throughout the action area, however; cumulatively this action will have only a minor effect on the current management and use of groundwater resources in the project area due to the short duration of the action.

This analysis indicates that future projects, including future water transfer projects, may improve CVP water supply reliability and reduce the need for groundwater withdrawals locally. These types of programs will modify water supply reliability but not change CVP deliveries or allocations from within the historical ranges as this action will not alter the overall water supply.

The No Action Alternative will result in continued groundwater pumping in order to meet specific crop demands. The No Action Alternative will not alter current groundwater management and use in the project area.

4.3 Surface Water Resources

Surface water is the primary supply of water for both agricultural and M&I uses in the action area. Although some districts have supplies of non-CVP water supplies, the vast majority of the Contractors rely on CVP water as their primary surface water supply. Under both the Proposed Action and the No Action Alternative, flexibility and ease of transferring CVP supplies will result in water supplies moving to the highest beneficial or economic use. Water districts typically have the following water management related goals:

- Avoid long-term overdraft by achieving a balanced groundwater budget
- Create a sufficient water supply for all uses
- Integrate groundwater management with use of CVP and other surface water supplies as available
- Include conjunctive use as a groundwater management tool as geologic conditions allow
- Maintain and enhance groundwater recharge and maximize groundwater recharge as geologic conditions allow
- Create a distribution system to fully utilize all water supplies
- Create sufficient recharge capacity, demand, or storage to fully utilize available CVP water supplies
- Avoid or correct groundwater levels that are too low to support existing wells or too high to protect the root zone or prevent groundwater recharge
- Provide water supplies that meet drinking water quality standards to municipalities (as applicable)

- Prevent contamination of groundwater from spills, leaks, confined animal feeding operations, and stormwater runoff
- Minimize long-term dissolved solids concentrations in groundwater
- Maximize cropland preservation
- Develop cooperative agreements between water agencies and land use planning agencies
- Monitor groundwater characteristics

Working toward achieving the above objectives (as appropriate and applicable to each district) would be defined as good water management from the perspective of the water districts. Implementation of an AWTP facilitates these objectives as part of an overall strategy. It is highly unlikely that a district would allow the transference of water that could be put to the highest beneficial and economic use within the district. Proposals of transfer greater than 20% of the contractor's contractual supply either individually or cumulatively must be noticed for public review. Water transferred under this project would be water that the district made available due to farm economic decisions and cropping pattern decisions on the landowner/farmer level. These decisions are made looking at the profitability of the potential crop and the overall farm operations. Water transference also occurs due to weather and hydrologic conditions (i.e. planned irrigation need is offset by rainfall freeing up water supplies that were planned to be utilized) and or timing of allocation increases and or conveyance availability. The supply transferred under the Proposed Action and the No Action Alternative will not affect water supply diversions from the Delta since this is the same water supply allocated to the districts south of the Delta. No new facilities would be built nor water diverted from the Delta that would not have been diverted. Although surface water deliveries to individual contractors could increase or decrease under both the Proposed Action and the no-action alternative, this change is driven by the need to meet existing demands within fluctuating hydrological and economical conditions. Since the individual district has control over the transfer of the water and since it is a reasonable assumption that a district would not make adverse water management decisions for the good of the district landholders, the surface water supplies within each district would not be negatively impacted from the standpoint of needed water deliveries or "good water management." The Proposed Action would not cause any additional water to be diverted from non-CVP sources therefore it will not impact non-CVP related surface water supplies.

Surface water resources under the Proposed Action in the action area would be identical to conditions under the No Action Alternative. The Proposed Action would not alter CVP operations, water storage or release patterns from CVP facilities, or the maximum volume of water delivered to the Contractors as compared to the No Action Alternative.

The Proposed Action would not result in cumulative adverse impacts to surface water resources, quality, or facilities when considered in combination with future projects. This analysis indicates that future projects, including future water transfer projects, may improve CVP water supply reliability for individual districts but does not change the net CVP water deliveries. These types of programs would modify water supply reliability but not change CVP contract amounts or deliveries from within the historical ranges.

4.4 Land Use

It is not expected that transfers or exchanges of water within one year will cause land use changes among the Contractors. Transfers or exchanges causing land use changes are precluded from both the project description and the No Action Alternative. These transfers and exchanges will facilitate the completion of crop production in a single growing season based on cropping patterns established early in the contract year and/or will allow continued irrigation of high value permanent crops to prevent investment losses in the trees or vines involved. These transfers or exchanges will also prevent crop revenue loss and will be driven by the economics or the value of the potential crop loss compared to the cost of the water obtained. However, they will not drive the development of new farm land or M&I infrastructure as they are of short duration and contingent upon uncertain hydrological conditions.

Neither of the alternatives includes new facilities or construction. It is anticipated that growth would continue to occur as described in the county general plans and as projected by the Department of Finance with protections for the environment. CVP contract water supplies have been incorporated into water supply plans of most Contractors for the last 40 years or more and temporary one-year transfers will not drive land use decisions formulated by the entities with the land use approval decision making authority. This authority is usually held by the counties or the cities. These agencies are mandated to meet anticipated growth addressed in county general plans. Typically the responsibility to address effects to land uses would be with the local government as part of their California Environmental Quality Act compliance for their actions. The general plans assume that growth would continue with or without the CVP water service contractual supplies based upon the ability to use existing supplies and to acquire or develop alternative long term supplies. Temporary transfers may assist existing M&I development to withstand dry water years with less restrictions but are not long term supplies for future permanent development.

For example, Reclamation is not responsible for the development of housing tracts or industrial development in a community. Such actions are approved locally and at the state level (However, other federal agencies, such as Housing and Urban Development, may be involved.). Further, if a farmer changes from one irrigated crop to another because of economic reasons, Reclamation does not control the farmer's decision. On the other hand, Reclamation would need to consider the effects to land uses and changes when Reclamation acknowledges lands being detached or brought into an irrigation district.

It should be noted the temporary transfers envisioned within the contracts are not the factor driving growth and land use change. Demographic, economic, political, and other factors, independent of the long-term contract process and transfer and exchange approvals, are causing changes with direct and indirect effects to land use that are beyond the range of Reclamation's responsibilities. With little exception, virtually all of the transfer approval actions are within the range of existing conditions. This includes the area of use, types of use, range of river flows, and reservoir fluctuations. No additional infrastructure would be constructed, no increase in total deliveries, and no conversion of existing natural habitat into farmland or other uses.

The No Action Alternative is the same as the Proposed Action with regard to land use impacts. The same amount of water would be applied to support existing lands uses.

The temporary transfers and exchanges under the Proposed Action would not result in cumulative adverse impacts to land use resources when considered in combination with future projects. Analysis indicates that future projects, including future water transfer projects, may improve CVP water supply reliability. These types of programs would modify temporary water supply reliability but not change CVP contract amounts or deliveries from within the historical ranges. Therefore, land use would not change under either of the alternatives.

A project would not cause a secondary growth impact unless the growth would not occur without the project. Most CVP Contractors have no land use jurisdiction in the counties. The cities who are Contractors have more land use decision making authority. The counties and cities have the ability and obligation to ensure that development occurs without harm to sensitive habitat and cultural resources. It should also be noted that the purpose of the project is to allow temporary redistribution of water supplies within the action area. The project is not designed to improve water supply reliability or water facility capacity. The implementation of the Proposed Action would not change regional growth forecasts as compared to the No Action Alternative.

4.5 Wildlife and Special Status Species

Under the Proposed Action, transferred water would be used to temporarily make up for shortages in supply or improve timing of water deliveries. The limited duration of this supply precludes its use as a reliable source of water. Conversion of native land into agriculture use requires a reliable water supply. Therefore there would be no loss of native habitat for wildlife species and no affect to listed species or critical habitat.

This action would not result in any impacts to source districts, as the transfers and exchanges would be in response to climatic conditions, crop requirements, economics, or water delivery timing issues. These factors are not under the control of the farmers and must be dealt with on an annual basis. By providing a means for water delivery flexibility, this action would help preserve the farming practices of the source areas as well as the receiving areas. Under the conditions of this Proposed Action there will be no third party water used to free up the CVP water being transferred or exchanged.

Neither alternative includes any new facilities or construction. Demographic, economic, political, and other factors, independent of transfers and exchanges, are causing changes with direct and indirect effects to biological resources that are beyond the range of Reclamation's responsibilities. All of the transfer and exchange actions are within the range of existing conditions. This includes the area of use, types of use, range of river flows, and reservoir fluctuations. No additional infrastructure would be constructed, there would be no increase in deliveries, and no conversion of existing natural habitat into farmland or other uses.

In some instances the responsibility to address affects to biological resources would be with the local government as part of their California Environmental Quality Act compliance for their actions. For example, Reclamation is not responsible for the development of housing tracts or

industrial development in a community. Such actions are approved locally and at the state level (However, other federal agencies, such as Housing and Urban Development, may be involved.). Further, if a farmer changes from one irrigated crop to another because of economic reasons, Reclamation does not control the farmer's decision. On the other hand, Reclamation would need to consider the effects to biological resources when Reclamation approves new lands being brought into an irrigation district and when Reclamation approves a change in use.

The Department of the Interior is developing strategies to address the impacts upon special status species in the CVP service areas. In addition, any federal action that may affect listed species must comply with Endangered Species Act. This requirement for compliance is also required for other Federal approvals and permits, including Corps of Engineers permits for dredging and filling of wetlands. This type of regulatory compliance is required for several federal actions and would be included in the overall local planning process.

Biological resources in the Proposed Action would be identical to conditions under the No Action Alternative. The Proposed Action would not alter CVP operations, water storage or release patterns from CVP facilities, or the maximum volume of water delivered to the Contractors as compared to the No Action Alternative. Therefore, biological resource conditions under the Proposed Action would be identical to those under the No Action Alternative.

The No Action Alternative will result in continued transfers and exchanges of water that are approved on a case by case basis. As such the impacts would be the same as described under the Proposed Action. There would be no impacts to fish and wildlife, listed species or critical habitat.

Cumulatively this action will have a no affect on fish and wildlife in the project area. Transfers and exchanges under the Proposed Action would not result in cumulative impacts to biological resources in addition to those occurring under the Affected Environment in the baseline case. These issues were evaluated as part of previous environmental documentation. It is not foreseen that land use plans and resource conservation plans would change without additional environmental documentation.

4.6 Cultural Resources

This Proposed Action will not result in the conversion or disturbance of additional land or the impact any known cultural sites. Consultation was done with Reclamation's Regional Archeologist who confirmed that there were no cultural resource's in the action area that would likely be impacted based on the Proposed Action which from an "on the ground perspective" there is no change in action from the No Action Alternative. The project description ensures that no new lands will be put into production with this water. Further, if a farmer changes from one irrigated crop to another because of economic reasons within already tilled farmland, this should not have any impact on cultural resources.

Cultural resources under the Proposed Action would be identical to conditions under the No Action Alternative. The Proposed Action would not alter CVP operations, water storage or

release patterns from CVP facilities, or the maximum volume of water delivered to the Contractors as compared to the No Action Alternative.

The No Action Alternative will not result in the conversion of additional land or the impact any known cultural sites.

The cumulative effect of future programs with the AWTP would modify temporary water supply reliability but not change CVP contract amounts or deliveries from within the historical ranges.

4.7 Indian Trust Assets

The Proposed Action will not alter the manner in which water is delivered to Indian Trust Assets, and as such will have no impact on Indian Trust Assets within the scope of this action.

There are no Indian Trust Assets recognized by the Bureau of Indian Affairs within the action area.

The No Action Alternative will not alter the manner in which water is delivered to Indian Trust Assets, and as such will have no impact on Indian Trust Assets within the scope of this action.

4.8 Environmental Justice

This action will increase the flexibility of water deliveries to the contractors. This increased flexibility may lead to a further diversification of crops within these districts. This could lead to a shift in the timing needs of farm labor during the year the Proposed Action would occur, however the need for farm labor is not expected to change as a result of this action.

The No Action Alternative will not change the flexibility of water deliveries to the contractors covered. Therefore the No Action Alternative will have no impact on environmental justice.

SECTION 5: CONSULTATION AND COORDINATION

Fish and Wildlife Coordination Act (16 USC . 651 et seq.)

The Fish and Wildlife Coordination Act requires that Reclamation consult with fish and wildlife agencies (federal and state) on all water development projects that could affect biological resources. The implementation of the CVPIA, of which this action is a part, has been jointly analyzed by Reclamation and the FWS and is being jointly implemented. This continuous implementation and consideration of the views of the FWS satisfies any applicable requirements of the FWCA.

Endangered Species Act (16 USC . 1521 et seq.)

Section 7 of the Endangered Species Act requires federal agencies, in consultation with the Secretary of the Interior, to ensure that their actions do not jeopardize the continued existence of federally endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of these species.

Reclamation has completed consultation for the Operations and Criteria and Plan (OCAP) that included the pumping and conveyance of this water and coordination of operations of the CVP and SWP.

Reclamation has determined the transfers, exchanges and conveyance of this CVP water would have no effect on threatened and endangered species and no further consultation is required under Section 7 of the Endangered Species Act. This determination is based on the transfers and exchanges would not change pumping conditions in the Delta to protect fish. Reclamation and DWR would continue to make decision whether to pump and convey this water based on external conditions independent of the transfers and exchanges. Water is pumped from the Delta in accordance with the OCAP and other regulatory requirements to protect fish and water quality resources. Similar amounts of water are pumped and conveyed DWR based on demands and capacity although the label on the water may differ.

The transfers and exchanges are water management actions to support existing uses and conditions. No native lands would be cultivated. Lands fallowed for three or more years would require surveys for wildlife species including threatened and endangered species prior to application of this water. Subsequent environmental review and consultations, if applicable would be required to irrigate lands fallowed three or more years. Therefore, the Proposed Action would have no effect on federally listed threatened or endangered species or their designated habitats.

NATIONAL HISTORIC PRESERVATION ACT (15 USC . 470 et seq.)

Section 106 of the National Historic Preservation Act requires federal agencies to evaluate the effects of federal undertakings on historical, archaeological and cultural resources. Due to the nature of the proposed project, there will be no effect on any historical, archaeological or cultural resources, and no further compliance actions are required.

List of Contributors and Reviewers

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Appendix A

Water Deliveries for the Three Normal Years Prior to CVPIA Analysis for South of Delta

The three normal years prior to CVPIA enactment for South of Delta has been determined to be 1987, 1988 and 1989 since these were the latest years prior to CVPIA to have a 100% contract supply allocation.

Delta Mendota Canal Districts Contract Supply (ac-ft)	1987 Deliveries. ac-ft	1988 Deliveries. ac-ft	1989 Deliveries. ac-ft	Average ac-ft
Banta Carbona ID 25,000	25,489	19,320	20,546	21,785
Broadview WD 27,000	19,467	17,685	19,394	18,849
Centinella WD 2,500	2,136	2,551	2,415	2,367
Del Puerto WD 140,210	140,127	145,781	130,715	138,874
Eagle Field WD 4,550	3,874	4,051	3,644	3,856
Laguna WD 800	800	800	800	800
Mercy Springs WD 13,300	10,256	9,199	10,266	9,907
Oro Loma WD 4,600	5,957	5,959	4,613	5,510
Patterson WD 16,500	20,967	21,955	19,055	20,659
Plain View WD 20,600	18,307	20,581	18,964	19,284
City of Tracy 10,000	6,122	5,158	5,679	5,653
The West Side ID 7,500	7,500	7,492	7,927	7,640
West Stanislaus ID 50,000	57,877	53,009	51,454	54,113
Widren WD 2990	2,161	1,807	1,518	2,298

Purple data is from CVO and is calculated on a contract year. These are deliveries in-district including transfers in.

Red shows total contract supply

* Data was obtained from the Tracy office on 12/01/04 from the 705 for each contract year. This data probably includes transfers out. CVO delivery data was not available.

Mendota Pool Districts	1987 Del. ac-ft	1988 Del. ac-ft	1989 Del. ac-ft	Average ac-ft
James ID 35,300	50,654	53,330	42,804	48,929
Tranquillity ID 13,000	24,268	27,443	29,733	27,148
Hughes, Melvin 70	56	72	86	71
Fresno Slough 4,000	3,360	3,673	3,956	3,663
Reclamation Dist. 1606 228	389	108	391	296
Coelho Family Trust 2,080	1,978*	2,080*	2,080*	2,046*

Purple data is from CVO and is calculated on a contract year. These are deliveries in-district including transfers in.

Red shows total contract supply

* Data was obtained from the Tracy office on 12/01/04 from the 705 for each contract year. This data probably includes transfers out. CVO delivery data was not available.

San Luis Unit Districts	1987 Del. ac-ft	1988 Del. ac-ft	1989 Del. ac-ft	Average ac-ft
Pacheco WD 10,080	12,248	13,389	13,439	13,025
Panoche WD 94,000	101,240	97,897	86,081	95,073
San Luis WD 125,000	129,456	140,706	95,633	121,932
Westlands WD 1,161,000	1,351,703	1,216,561	1,118,316	1,225,527
City of Avenal 3,500	1,428	1,849	2,583	1,953
City of Huron 3,000	819	936	870	875
City of Coalinga 10,000	5,018	5,079	6,235	5,444

Purple data is from CVO and is calculated on a contract year. These are deliveries in-district including transfers in.

Red shows total contract supply

* Data was obtained from the Tracy office on 12/01/04 from the 705 for each contract year. This data probably includes transfers out. CVO delivery data was not available.

San Felipe Districts	1987 Del. ac-ft	1988 Del. ac-ft	1989 Del. ac-ft	Average ac-ft
San Benito County WD 43,800	829*	12,476*	23,916	11,317
Santa Clara WD 152,800	36,752*	79,904*	104,222	73,626

Purple data is from CVO and is calculated on a contract year. These are deliveries in-district including transfers in.

Red shows total contract supply

* Data was obtained from the Tracy office on 12/01/04 from the 705 for each contract year. This data probably includes transfers out. CVO delivery data was not available.

Appendix B

Water Transfer Summary

The table below is a summary of past approved water transfers in the project area. Pre-CVPIA is from contract year (CY) 1982 to CY 1991. Post-CVPIA is from CY 1992 to CY 2003. A negative number in the right hand column signifies more water transfer out of the district than transferred in within the time frame evaluated. These water transfer totals are not limited to transfers under prior AWTPs.

	Acre-Feet of Water Transfer Out		Acre-Feet of Water Transfer In	Net Ac-ft Transferred In
Alpaugh ID				
Total Pre-CVPIA	0	Total Pre-CVPIA	4,993	4,993
Total Post-CVPIA	0	Total Post-CVPIA	5,590	5,590
Atwell Island WD				
Total Pre-CVPIA	0	Total Pre-CVPIA	2,954	2,954
Total Post-CVPIA	0	Total Post-CVPIA	1,575	1,575
Banta-Carbona ID				
Total Pre-CVPIA	0	Total Pre-CVPIA	0	0
Total Post-CVPIA	87,739	Total Post-CVPIA	1,000	86,739
Broadview WD				
Total Pre-CVPIA	6,455	Total Pre-CVPIA	0	-6,455
Total Post-CVPIA	22,383	Total Post-CVPIA	5,687	-16,896
Centinella WD				
Total Pre-CVPIA	0	Total Pre-CVPIA	0	0
Total Post-CVPIA	0	Total Post-CVPIA	1920	1920
City of Avenal				
Total Pre-CVPIA	0	Total Pre-CVPIA	0	0
Total Post-CVPIA	1,000	Total Post-CVPIA	400	-600
City of Coalinga				
Total Pre-CVPIA	0	Total Pre-CVPIA	0	0
Total Post-CVPIA	5,351	Total Post-CVPIA	0	-5,351
City of Huron				
Total Pre-CVPIA	0	Total Pre-CVPIA	0	0
Total Post-CVPIA	1,350	Total Post-CVPIA	547	-803

City of Tracy				
Total Pre-CVPIA	0	Total Pre-CVPIA	0	0
Total Post-CVPIA	3,870	Total Post-CVPIA	0	-3,870
Coelho Family Trust				
Total Pre-CVPIA	0	Total Pre-CVPIA	0	0
Total Post-CVPIA	7,959	Total Post-CVPIA	889	-7,070
County of Fresno				
Total Pre-CVPIA	0	Total Pre-CVPIA	0	0
Total Post-CVPIA	2,100	Total Post-CVPIA	650	-1,450
County of Tulare				
Total Pre-CVPIA	0	Total Pre-CVPIA	0	0
Total Post-CVPIA	994	Total Post-CVPIA	34,641	33,647
Del Puerto WD				
Total Pre-CVPIA	1,569	Total Pre-CVPIA	0	1,569
Total Post-CVPIA	150,936	Total Post-CVPIA	24205	-126,731
Eagle Field WD				
Total Pre-CVPIA	0	Total Pre-CVPIA	0	0
Total Post-CVPIA	5,448	Total Post-CVPIA	978	-4,470
Fresno Slough WD				
Total Pre-CVPIA	1,799	Total Pre-CVPIA	398	-1,401
Total Post-CVPIA	10,454	Total Post-CVPIA	163	-10,291
Hills Valley ID				
Total Pre-CVPIA	950	Total Pre-CVPIA	250	-700
Total Post-CVPIA	400	Total Post-CVPIA	21,000	-20,600
James ID				
Total Pre-CVPIA	25,608	Total Pre-CVPIA	16,600	-9,008
Total Post-CVPIA	1,804	Total Post-CVPIA	0	-1,804
Kern-Tulare WD				
Total Pre-CVPIA	66,934	Total Pre-CVPIA	18,117	-48,817
Total Post-CVPIA	65,147	Total Post-CVPIA	40,376	-24,771
Kern-Tulare WD & Rag Gulch WD				
Total Pre-CVPIA	0	Total Pre-CVPIA	774	774
Total Post-CVPIA	0	Total Post-CVPIA	3,614	3,614
Laguna WD				
Total Pre-CVPIA	0	Total Pre-CVPIA	10,000	10,000
Total Post-CVPIA	1,792	Total Post-CVPIA	0	-1,792

Lower Tule River ID				
Total Pre-CVPIA	299,837	Total Pre-CVPIA	274,536	-25,301
Total Post-CVPIA	277,299	Total Post-CVPIA	95,070	-182,229
Melvin Hughes				
Total Pre-CVPIA	243	Total Pre-CVPIA	0	-243
Total Post-CVPIA	0	Total Post-CVPIA	0	0
Mercy Springs WD				
Total Pre-CVPIA	4,300	Total Pre-CVPIA	0	-4,300
Total Post-CVPIA	39,043	Total Post-CVPIA	12,294	-26,749
Oro Loma WD				
Total Pre-CVPIA	0	Total Pre-CVPIA	0	0
Total Post-CVPIA	6,087	Total Post-CVPIA	4,132	-1,955
Patterson WD				
Total Pre-CVPIA	0	Total Pre-CVPIA	0	0
Total Post-CVPIA	102,385	Total Post-CVPIA	36	-102,349
Pacheco WD				
Total Pre-CVPIA	0	Total Pre-CVPIA	0	0
Total Post-CVPIA	0	Total Post-CVPIA	1,098	1,098
Panoche WD				
Total Pre-CVPIA	10,694	Total Pre-CVPIA	15,018	25,712
Total Post-CVPIA	126,012	Total Post-CVPIA	45,884	171,896
Pixley ID				
Total Pre-CVPIA	29,100	Total Pre-CVPIA	56,131	27,031
Total Post-CVPIA	134,826	Total Post-CVPIA	289,793	154,967
Plain View WD				
Total Pre-CVPIA	3,865	Total Pre-CVPIA	0	3,865
Total Post-CVPIA	82,085	Total Post-CVPIA	729	-81,356
Rag Gulch WD				
Total Pre-CVPIA	3,325	Total Pre-CVPIA	8,250	4,925
Total Post-CVPIA	20,486	Total Post-CVPIA	20,280	-206
Reclamation District 1606				
Total Pre-CVPIA	0	Total Pre-CVPIA	13	13
Total Post-CVPIA	489	Total Post-CVPIA	0	-489
San Benito County WD				
Total Pre-CVPIA	0	Total Pre-CVPIA	0	0
Total Post-CVPIA	0	Total Post-CVPIA	2,500	2,500

San Luis WD				
Total Pre-CVPIA	27,295	Total Pre-CVPIA	61,517	34,222
Total Post-CVPIA	98,454	Total Post-CVPIA	73,341	-25,113
Santa Clara Valley WD				
Total Pre-CVPIA	0	Total Pre-CVPIA	0	0
Total Post-CVPIA	0	Total Post-CVPIA	48,474	48,474
The West Side ID				
Total Pre-CVPIA	0	Total Pre-CVPIA	0	0
Total Post-CVPIA	27,387	Total Post-CVPIA	108	-27,279
Tranquillity ID				
Total Pre-CVPIA	42,605	Total Pre-CVPIA	406	-42,199
Total Post-CVPIA	63,867	Total Post-CVPIA	9,779	-54,088
Tri-Valley ID				
Total Pre-CVPIA	571	Total Pre-CVPIA	125	-446
Total Post-CVPIA	0	Total Post-CVPIA	5,195	5,195
West Stanislaus WD				
Total Pre-CVPIA	0	Total Pre-CVPIA	0	0
Total Post-CVPIA	17,297	Total Post-CVPIA	8,439	-8,858
Westlands WD				
Total Pre-CVPIA	80,434	Total Pre-CVPIA	209,095	128,661
Total Post-CVPIA	231,859	Total Post-CVPIA	980,309	748,450
Widren WD				
Total Pre-CVPIA	0	Total Pre-CVPIA	0	0
Total Post-CVPIA	12,846	Total Post-CVPIA	72	-12,774
Total Pre-CVPIA	599,715	Total Pre-CVPIA	679,177	
Total Post-CVPIA	1,128,464	Total Post-CVPIA	1,605,412	

Appendix C

Brief Threatened and Endangered Species Accounts

California Tiger Salamander (*Ambystoma californiense*)

Federal Status: Threatened; State Status: None

Species Description: The California tiger salamander is a large and stocky terrestrial amphibian with small eyes and broad, rounded snout that utilizes both aquatic and upland habitats during its lifespan. While individuals may survive for more than 10 years, many breed only once; in some populations, less than 5 percent of marked juveniles survived to become breeding adults (Trenham 1998b in USFWS 2004a). The salamander larvae, being among the top aquatic predators in the seasonal pool ecosystem, feed on zooplankton, small crustaceans, and aquatic insects for approximately 6 weeks after hatching, after which they switch to larger prey (Anderson 1968). The frequent occurrence of midge larvae (Chironomidae) in their guts suggests a tendency to feed at or near surficial bottom sediments. Larger larvae have been known to consume smaller tadpoles of Pacific tree frogs (*Hyla regilla*) and California red-logged frogs (*Rana aurora draytonii*) in addition to many aquatic insects (Anderson 1968). The adult salamander's diet is not well known but may include insects, isopods, mollusks and worms (Dodson and Dodson 1971).

Reproduction and Development: The adult salamanders primarily breed and lay eggs in vernal pools and other seasonal ponds following rains in November to February (Twitty 1941; Shaffer and Fisher 1991; Shaffer *et al.* 1993a; Petranka 1998). After breeding, adults leave the pool and return to small mammal burrows (Loredo *et al.* 1996; Trenham 1998a in USFWS 2004a), although they may continue to come out nightly for approximately the next two weeks to feed (Shaffer *et al.* 1993b). Salamander eggs hatch in 10 to 14 days with newly hatched aquatic salamanders (larvae). The larvae obtain oxygen through gills and through the skin. The larvae probably rest in contact with pond bottom mud during part of the day, and are known to bury themselves in the mud when pursued. The larval stage of the salamander usually lasts 3 to 6 months (based on seasonal ponds and pools drying up) (Petranka 1998). Metamorphosed juveniles leave their ponds in the late spring or early summer and settle in small mammal burrows (Zeiner *et al.* 1988 in USFWS 2004a; Shaffer *et al.* 1993a; Loredo *et al.* 1996). Like adults, juveniles may emerge from these retreats to feed during nights of high humidity (Storer 1925; Shaffer *et al.* 1993a) before settling in their selected aestivation sites for the dry, hot summer months. Juveniles do not typically return to the breeding pools until they reach sexual maturity at several years of age (Trenham 1998b in USFWS 2004a).

Habitat: California tiger salamander breeding and aestivation habitat includes vernal pools, and seasonal and perennial ponds and surrounding upland areas in grassland and oak savannah plant communities from sea level to about 1,067 meters (m) (3,600 feet (ft)) (Shaffer *et al.* 1993a; Jennings and Hayes 1994 in USFWS 2004a; Petranka 1998; CNDDB 2003; Bobzien in litt. 2003; USFWS 2004c). The survival and viability of this species is directly related to availability of breeding ponds with hydrological and other factors conducive to the salamander's reproduction. Sub-adult and adult California tiger salamanders spend the dry summer and fall

months of the year aestivating in the burrows of small mammals (Storer 1925; Loredó-Prendeille *et al* 1996; Petranks 1998; Trenham 1998a in USFWS 2004a). Once rains begin, they emerge from their burrow at night to feed and migrate to breeding ponds.

Critical Habitat: On August 10, 2004, USFWS published a proposed designation of critical habitat for the Central California population of California tiger salamanders (USFWS 2004b). The proposed rule contains approximately 382,666 acres of federal, state/county, and private land in 4 regions in central and coastal California, with 47 individual units among those four regions.

Vernal pool fairy shrimp (*Branchinecta lynchi*)

Status: Threatened

Habitat requirements and distribution in the San Joaquin Valley: This species is a small anostracan crustacean that inhabits ephemeral pools and swales. It is widely distributed across the Central Valley from Shasta County to Tulare County, and in intermountain valleys of the central and southern Coast Ranges, but is uncommon throughout its range (Eng *et al.*, 1990 cited in USFWS 2003a). This species requires clear-water, rain-filled pools in sandstone and basalt-flow depressions, grassy swales, and earth slumps (Eriksen and Belk 1999). It also can occur in agricultural furrows on sites of former vernal pools (R. Arnold, pers. comm. 2001). Like other vernal pool crustaceans, this species has a rapid growth and reproductive cycle timed to the short period of inundation in winter and early spring. *B. lynchi* develops more quickly than many other Central Valley fairy shrimp, and the pools this species dwells in are typically shorter-lived than those inhabited by other Central Valley fairy shrimp (Eriksen & Belk 1999). They can hatch within a few days after their pools fill with water and reproduce within a few weeks after hatching (Eriksen and Belk 1999). The fertilized eggs develop into embryos that form dormant cysts. These cysts are highly resistant to desiccation and temperature extremes, and can survive many years in dry pool bottoms. This species is threatened primarily by loss of vernal pool habitat to agriculture and urban development.

Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)

Status: Threatened

Habitat requirements and distribution in the San Joaquin Valley: This species occurs in riparian woodland and shrub habitats of the San Joaquin River and other watercourses of the valley. It depends entirely on its host plant, the blue elderberry (*Sambucus mexicana*), which is a common component of the remaining riparian forests and adjacent upland habitats of the Central Valley. The beetle's range extends throughout the Valley and surrounding foothills to about the 3,000-foot elevation contour on the east and the watershed of the Central Valley on the west (USFWS 1999). It prefers mature, stressed elderberry plants 2-8 inches in diameter and stems greater than one inch diameter (BioSystems Analysis 1994, CDFG 2004). Its life cycle takes one or two years to complete. The larvae grow and feed within the stems, trunk and roots, and emerge through characteristic oval-shaped exit holes. Adult emergence is from late March through June, about the same time the elderberry produces flowers. The species is threatened primarily by destruction of its habitat for agriculture, urban development and flood control.

Giant kangaroo rat (*Dipodomys ingens*).

Federal Status: Endangered; State Status: Endangered.

Historically, the Giant kangaroo rat occurred in the Tulare Basin and in the adjacent Carrizo Basin and Cuyama and Panoche Valleys. This distribution closely coincides with the distribution of marine sediment-derived soils on the southern and western edges of the San Joaquin Valley (Williams 1992). Conversions of grasslands to agriculture and other land issues has resulted in 98% loss of habitat suitable for the Giant kangaroo rat (Williams 1992). The species is found in less than 2% of its historical range, in small, widely scattered colonies in areas such as the Panoche and Cuyama Valleys, Carrizo and Elkhorn Plains, and the upper Buena Vista Valley in the Elk Hills (Williams 1980).

Loss of habitat to agriculture and other land-modifying actions is the primary reason for the decline of this species. This decline is still continuing with habitat loss still the main threat to this species (CDFG 1987). Intensive livestock grazing and the use of rodenticides may contribute to the continued decline (Williams 1992).

Kangaroo rats are in general non-migratory and therefore not likely to invade on highly disturbed or cultivated fields. There is low probability they would occupy lands that have been fallowed for two years.

Tipton kangaroo rat

Federal Status: Endangered; State status: Endangered.

The Tipton kangaroo rat is one of three geographically separated subspecies of San Joaquin kangaroo rat (*Dipodomys nitratoideus*), the other being the Fresno kangaroo rat (*D. nitratoideus exilis*) and the Short-nosed kangaroo rat (*D. nitratoideus brevinasus*) (Brylski and Roest 1994, Brylski et. al 1994, USFWS 1998). Fresno and Tipton kangaroo rats once occupied contiguous geographic ranges within the Tulare Basin and the southeastern half of the San Joaquin Basin in the San Joaquin Valley (USFWS 1998).

Tipton kangaroo rats occupy arid land communities on alluvial fan and floodplain soils having level or near-level topography with elevated soil structures such as mounds, berms, or embankments or burrows (Brylski et. al. 1994, USFWS 1998).

Fresno kangaroo rat (*Dipodomys nitratoideus exilis*)

Status: Endangered

Habitat requirements and distribution in the San Joaquin Valley: This subspecies historically occurred in the central San Joaquin Valley from Fresno County to Merced County (BioSystems Analysis 1994, CDFG 2004). It occurs in alkali marsh and other relatively bare areas with alkaline and clay-rich soil. Fresno kangaroo rats use burrows for shelter and reproduction, which are typically located in friable soil mounds around shrubs and grasses. Nearly all of its former habitat has been converted to irrigated farmland, and the species has not been found on cultivated or fallow cropland (BioSystems Analysis 1994). The last recorded sighting of Fresno kangaroo rat was in 1992 at Alkali Sink Ecological Reserve, approximately 25 miles west of the study area. It has not been found despite intensive field surveys since 1992 and may now be extinct (Kelly and Phillips 2004).

Bald eagle (*Haliaeetus leucocephalus*)

Status: Threatened, Proposed Delisted

Habitat requirements and distribution in the San Joaquin Valley: The bald eagle lives along lake shores, reservoirs, rivers and other large water bodies which it requires for foraging. It feeds mainly on fish and waterfowl, which may be taken live or scavenged (CDFG 2004). Bald eagles nest in tall trees, often found in mixed conifer or ponderosa pine forests, and always near large water bodies. They may also nest in hardwoods, depending on tree size and structure. Nests are usually built at or near the top of mature trees with accessible crowns for take-off and landing (Lehman 1979). Snags and dead-topped trees provide perch and roost sites for the nesting birds. Breeding bald eagles in California tend to be year-round residents of their nesting territories, but many birds from out of state, as well as non-breeding eagles, migrate to and winter in lowlands of California (BioSystems Analysis 1994). Bald eagles winter throughout the Valley (CDFG 2002) but are relatively uncommon in Fresno and Madera counties (Fresno Audubon Society 2000). Their populations were reduced primarily by shooting, habitat loss, and poisoning by pesticides, but have recovered substantially in recent years following the ban of the pesticide DDT and other protection efforts (BioSystems Analysis 1994). In 1999, the USFWS proposed delisting the bald eagle.

Blunt-nosed leopard lizard (*Gambelia sila*)

Status: Endangered

Habitat requirements and distribution in the San Joaquin Valley: This species is a relatively large iguanid lizard that occurs in scattered, undeveloped areas on the Valley floor, particularly in the southern and western San Joaquin Valley and adjacent valleys in the Coast Ranges (CDFG 2002). It inhabits open, sparsely-vegetated areas in arid grassland, scrub, and playas, and frequently seeks refuge in small mammal burrows (Stebbins 2003). It prefers flat terrain and tends to avoid dense or tall herbaceous cover that restricts vision for foraging and escape from predators (Warrick et al. 1998). It is threatened primarily by habitat loss and increased human presence, but is also affected by overgrazing and rodent control. Those lands where the species still exists are often heavily grazed or treated with pesticides, both of which have been shown to have detrimental effects on the lizard (Germano and Williams 1992).

Delta smelt (*Hypomesus transpacificus*)

Status: Threatened

Habitat requirements and distribution in the San Joaquin Valley: The delta smelt is a small, euryhaline fish that is endemic to the upper San Francisco estuary, primarily the Sacramento/San Joaquin Delta and Suisun Bay. Delta smelt generally rear in middle estuary areas where fresh water and brackish water mix, and move gradually upstream during fall and winter to spawn in the upper Delta during spring (Moyle 2002). Since most delta smelt have a one year life cycle, they are particularly susceptible to poor conditions such as during a drought year. The species is threatened primarily by water diversion for agricultural and urban use (BioSystems Analysis 1994).

Vernal pool tadpole shrimp (*Lepidurus packardii*)

Status: Endangered

The vernal pool tadpole shrimp (*Lepidurus packardii*) inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water. The vernal pool tadpole shrimp is known from 18 populations in the Central Valley, ranging from east of Redding in Shasta County south through the Central Valley to the San Luis National Wildlife Refuge in Merced County and from a single vernal pool complex located on the San Francisco Bay National Wildlife Refuge in the City of Fremont, Alameda County (50 CFR Part 17).

The vernal pool tadpole shrimp inhabits vernal pools that contain clear to highly turbid water and range in size from 6 square yards in the Mather Air Force Base area of Sacramento County to the 89-acre Olcott Lake at Jepson Prairie.

The life history of the vernal pool tadpole shrimp is linked to the phenology of the vernal pool habitat. The vernal pools have a very low conductivity, total dissolved solids, and alkalinity. These pools are located most commonly in grass-bottomed swales of grasslands in old alluvial soils underlain by hardpan or in mud-bottomed pools containing highly turbid water. After winter rainwater fills the pools, the populations are reestablished from diapaused eggs that lie dormant in the dry pool sediments. Adults are often present and reproductive until the pools dry up in the spring.

Central Valley steelhead (*Onchorhynchus mykiss irideus*)

Status: Threatened

Habitat requirements and distribution in the San Joaquin Valley: Steelhead trout are anadromous, salmonid fish that migrate through Central Valley rivers and creeks en route to spawning grounds in the Sierra foothills and mountains. Adult Central Valley steelhead generally begin returning from the ocean to enter fresh water in early fall, and hold in downstream areas until flows are high enough in tributaries for spawning (Moyle 2002). They usually spawn during winter in high-gradient, upper reaches of tributaries in cool, well-aerated water. After hatching, steelhead usually stay in fresh water for one to two years. Juveniles can occupy a variety of in-stream habitats that provide adequate cover, food supply, and cold water temperatures (Moyle 2002). The species formerly was much more abundant and widespread in the Valley, but historic runs have been all but eliminated by dam construction and water diversions. These activities have blocked steelhead from their historic spawning grounds and have also substantially reduced downstream flows. In the San Joaquin basin, spawning steelhead now appear to be limited to a small population in the lower Stanislaus River (Yoshiyama 1999, unpublished data cited in Moyle 2002).

California red-legged frog (*Rana aurora draytonii*)

Status: Threatened

Habitat requirements and distribution in the San Joaquin Valley: This frog lives in and near permanent sources of deep water, including perennial ponds, freshwater marshes and backwater areas of streams (Jennings and Hayes 1994). It prefers quiet water areas with pools at least two feet deep and dense riparian or emergent vegetation (Hayes and Jennings 1988, cited in USFWS 2002), but can also occur in artificial ponds that lack emergent vegetation (Scott and Rathbun *in*

litt. 1998, cited in USFWS 2002). California red-legged frogs often rest and feed in riparian vegetation close to water, and can disperse through upland habitats far from water, especially on rainy nights during winter. The species historically occurred in the San Joaquin Valley (Jennings and Hayes 1994), but may never have been widespread on the Valley floor (USFWS 2002). Its populations were severely reduced by hunting and are now threatened by habitat loss and introduction of exotic predators.

Giant garter snake (*Thamnophis gigas*)

Status: Threatened

Habitat requirements and distribution in the San Joaquin Valley: This aquatic snake inhabits freshwater marshes, low-gradient streams, canals, and irrigation ditches in the northern Valley as far south as Mendota. During its active season in spring and summer, it occurs predominantly in aquatic habitats and adjacent, dense marsh and riparian vegetation. From late October to late March, it takes refuge above the high-water line in abandoned rodent burrows and other subterranean refuges (BioSystems Analysis 1994; CDFG 2002). The species formerly had a more widespread latitudinal distribution in the Central Valley. It is threatened by wetland and waterway alteration, development, and exotic fishes (BioSystems Analysis 1994).

San Joaquin kit fox (*Vulpes macrotis mutica*)

Status: Endangered

Habitat requirements and distribution in the San Joaquin Valley: This subspecies once inhabited most of the San Joaquin Valley from Kern County north to San Joaquin County (Grinnell et al. 1937, cited in USFWS 1998). It typically occurs in arid grassland and scrub habitats, including alkali and saltbush scrub (BioSystems Analysis 1994). San Joaquin kit foxes require dens for shelter and reproduction, and prefer areas with friable soil for excavating dens. They may also use dens constructed by other animals, or use human-made structures such as culverts or abandoned pipelines (B. Cypher pers. comm., cited in USFWS 1998). Kit foxes often change dens and may use several dens throughout the year. In the southern part of its range, they feed mostly on kangaroo rats (*Dipodomys* spp.), pocket mice (*Perognathus* spp.), white-footed mice (*Peromyscus* spp.), and other nocturnal rodents (USFWS 1998). They are subject to predation by coyote (*Canis latrans*) and other larger carnivores. The largest extant population of kit foxes in the Valley is in western Kern County, but they may also occur in scattered areas of natural habitat in Fresno and Madera counties (USFWS 1998). The species has disappeared from much of its former range as natural habitat has been converted to agriculture and urban development. Kit fox populations are becoming increasingly disjunct and fragmented (Koopman et al. 2000). In some areas, kit foxes have adapted to agricultural and even urban environments that provide sufficient food, den sites, and protection from predators (Cypher and Frost 1999).

Plants

Fleshy owl's-clover (*Castilleja campestris* ssp. *succulenta*)

Status: Threatened

Description of species, habitat and distribution in the San Joaquin Valley: Fleshy owl's clover is a hemiparasitic annual plant in the snapdragon family (Scrophulariaceae). It is between two and ten inches tall and produces yellow flowers during April and May. Fleshy owl's clover is

endemic to vernal wetland habitats in the eastern San Joaquin Valley at elevations from 80 to 2,300 feet (USFWS 2003a). It is found most often in vernal pools on alluvial terraces and tends to favor mildly to strongly acidic soils (USFWS 2003a). There are 63 documented extant locations, scattered primarily in seven vernal pool complexes between northern Fresno County and San Joaquin County (USFWS 2003a).

California Jewel-flower (*Caulanthus californicus*)

Federal Status: Endangered; State Status: Endangered; CNPS list 1B

This annual herb occurs in chenopod scrub and in valley and foothill grassland habitats. The blooming period extends from February to May. The current range of this species includes Fresno and Kern Counties. Historic records are known from Kings and Tulare Counties, but the plant is believed to be extirpated from these areas (CNPS 1994). Twenty-four CNNDDB occurrences of California jewel have been reported within Tulare, Kings, Kern, and Fresno Counties as of April 2002.

Suitable valley and foothill grassland habitat for this species is present from the valley floor to the lower elevation foothills of the Sierra Nevada. In addition, suitable chenopod scrub habitat is present within historic lakebeds with heavy, saline and/or alkaline clays in portions of the action area, particularly in the southern San Joaquin Valley. Sensitive habitat in which this species occurs includes valley sink scrub, which is an element of chenopod scrub (Holland 1986). Most of this habitat has been extirpated due to flood control, agriculture development and groundwater pumping.

Kern mallow (*Eremalche kernensis*)

Federal Status: Endangered; State Status: None; CNPS list 1B

This annual herb occurs in chenopod scrub, and valley and foothill grassland habitats. The blooming period extends from March to May. The range of this species is limited to Kern County. The CNNDDB reports that observations occurred between 1938 and 1995, between the elevations of 230 and 1,700 feet. Many observations occurred in the Lokern and Semitropic quadrangle areas. Suitable valley and foothill grassland containing eroded hillsides, and chenopod scrub within alkali flats are present in portions of the action area, particularly in the southern San Joaquin Valley. Sensitive habitat in which this species occurs includes valley sink scrub, which is an element of chenopod scrub (Holland 1986). Most of this habitat has been extirpated due to flood control, agriculture development, and groundwater pumping (Holland 1986). This species is threatened by agriculture development and grazing (Hickman 1993).

San Joaquin Woolly-Threads (*Lembertia congdonii*).

Federal Status: Endangered; State Status: None; CNPS list 1B

This annual herb occurs in chenopod scrub, and in valley and foothill grassland habitats. The blooming period extends from March to May. The range of this species includes Fresno and Kern Counties. Historic records are known from Kings and Tulare Counties, but the plant is believed to be extirpated from these areas (CNPS 1994). Suitable sandy valley and foothill grassland and chenopod scrub within lakebeds of heavy saline and/or alkaline clays are present in portions of the action area, particularly towards the southwest San Joaquin Valley. Sensitive habitat in which this species occurs includes valley sink scrub, which is an element of chenopod

scrub (Holland 1968). Most of this habitat has been extirpated due to flood control, agriculture development and groundwater pumping.

Bakersfield Cactus (*Opuntia basilaris* var. *treleasei*).

Federal Status: Endangered; State Status: Endangered; CNPS list 1B.

This shrub occurs in chenopod scrub habitat and sandy soils within valley and foothill grassland habitat. The blooming period is May. The range of Bakersfield cactus is limited to Kern County. Recorded occurrences range in elevation between 290 and 1,800 feet. Suitable valley and foothill grassland and chenopod scrub forming arid plains are present in portions of the action area, particularly towards the southeast San Joaquin Valley. This species is threatened by agriculture and grazing (Hickman 1993).

San Joaquin Valley Orcutt grass (*Orcuttia inaequalis*)

Federal Status: Threatened

Description of species, habitat and distribution in the San Joaquin Valley:

San Joaquin Valley Orcutt grass is a grayish-green aromatic annual, two to six inches tall, in the grass family (Poaceae). It grows at least a few months underwater and occurs exclusively in vernal pool and swale habitats in the northeastern San Joaquin Valley from Tulare to Stanislaus counties, between 155 and 2,475 feet in elevation (USFWS 2003a). It blooms from April to September, as the vernal wetlands are drying, and requires undisturbed habitat into the late spring and summer months. San Joaquin Valley Orcutt grass generally grows in larger pools, presumably because these dry out later in the season (CDFG 2004).

Hairy Orcutt grass (*Orcuttia pilosa*)

Status: Endangered

Description of species, habitat and distribution in the San Joaquin Valley: Hairy Orcutt grass is a densely tufted annual, from two to eight inches tall, in the grass family (Poaceae). It blooms between May and September and grows exclusively in vernal pool habitats within the Sacramento and San Joaquin valleys, at elevations ranging between 180 to 405 feet (USFWS 2003a). In the San Joaquin Valley, it historically occurred in widely scattered locations within Stanislaus, Madera, and Merced counties. Hairy Orcutt grass is generally found in vernal pools on stream terraces and alluvial fans (Stone et al. 1988).

Hartweg's golden sunburst (*Pseudobahia bahiifolia*).

Federal Status: Endangered; State Status: Endangered; CNPS list 1B.

Description of species, habitat and distribution in the San Joaquin Valley: Hartweg's golden sunburst is a yellow-flowered annual, two to eight inches tall, in the aster family (Asteraceae). It blooms in March and April and is generally found at elevations less than 500 feet. Hartweg's golden sunburst often occurs on the upper, north-facing slopes of mima mounds associated with vernal pools, and it is also found in mesic sites such as shady creekbeds and north-facing slopes (Stebbins 1991, cited in Vollmar 2002). Historically, it is believed to have ranged across the eastern Central Valley from Fresno to Yuba counties, but now it is only known from two concentrations: one near the Fresno-Madera county line and a second in Merced and Stanislaus counties.

San Joaquin adobe sunburst (*Pseudobahia peirsonii*)

Federal Status: Threatened

Description of species, habitat and distribution in the San Joaquin Valley: San Joaquin adobe sunburst is a yellow-flowered annual, four to eighteen inches tall, in the aster family (Asteraceae). It blooms in March and April and occurs at elevations between 100 and 1,000 feet. It is entirely restricted to heavy adobe clay soils and its current range includes Fresno, Tulare and Kern counties in the eastern San Joaquin Valley.

Greene's tuctoria (*Tuctoria greenei*)

Status: Endangered

Description of species, habitat and distribution in the San Joaquin Valley: Greene's tuctoria is a tufted annual grass, two to six inches tall, in the grass family (Poaceae). It is documented from elevations between 110 to 440 feet and blooms between May and July. It often grows in shallower vernal pools, which dry in April or early May (Stone et al. 1988). Greene's tuctoria historically occurred in the Sacramento and San Joaquin valleys. However, in the San Joaquin Valley it is believed to be extirpated entirely from Fresno, Madera, San Joaquin, and Stanislaus counties and only remains in Merced County, where there are seven extant occurrences (CDFG 2004).

**Supplement to the Accelerated Water Transfer Program EA
EA-06-09**

The following paragraph was inadvertently omitted from the original Environmental Assessment.

Transfers among Project Contractors located within the same geographical areas that are supported by water conservation measures, increased water use efficiency, or other actions that result in water surplus to the Contractor's current year demand, will be deemed to comply with the criteria for reduction in the amount of water consumptively used or irretrievably lost. This consumptive use concept will apply to transfers between Project contractors located within the same geographical area who receive water through existing Delta Division facilities. The rationale for this concept is (1) Project contractors within the same geographical area are all served Project water pumped from the Delta and (2) allowing water transfers between Project contractors located within the same geographical area has no effect on total Delta demand or Project operations, and does not affect the amount of Project water Reclamation would otherwise pump, absent the transfer, and deliver for Project purposes within that geographical area. Such transfers must have occurred historically and analyzed under a prior environmental assessment resulting in a findings of no significant impact.